

Call for Papers

IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing (J-STARS)

Special issue of *Interoperability architectures and arrangements for multi-disciplinary Earth Observation systems and applications*

Papers are solicited for a Special Issue of IEEE J-STARS on *Interoperability architectures and arrangements for multi-disciplinary Earth Observation systems and applications*.

Understanding and managing the Earth environment requires multi-disciplinary capabilities – often at a global scale - and the formation and operation of distributed, multidisciplinary collaborative teams. This is a Science & Technology as well as a cultural challenge. To meet this need there have recently been a number of interoperability initiatives and programs that focus on improving access to, and usability of remote sensing and other Earth Observation resources for policy making and decision support.

In a large-scale integrated system, System of Systems (SoS) components can operate independently to offer products or services satisfying the requirements of various customers. An holistic technology architecture within a complex “ecosystem” (like the Earth Observation domain) is comprised of heterogeneous data models, services, and applications that mix multi-disciplinary capabilities and resources. These capabilities are either managed at the enterprise level by big organizations (e.g. WMO, UN, EPA, EEA, EC DG Env) or at the individual level by scientists (e.g. Facebook, iPhones, individual blogs, Wiki sites). A successful architecture must take a comprehensive and inclusive approach to all of these resources and tools. Such a global scale system of systems approach is essential to study and address global challenges, including: poverty reduction, food security and agricultural production, integrated water resource management, natural resource management (especially forests and biodiversity), migration, urbanization, land degradation, climate change, and safe and reliable energy supply.

The papers considered for this special issue will address recent breakthroughs in the science and technology useful for implementing multi-disciplinary interoperability. They will include the introduction and discussion of new or advanced multi-disciplinary interoperability solutions (e.g. multi-disciplinary data models, vocabularies, discovery & access service protocols, encoding languages, etc.), as well as the description of innovative multi-disciplinary systems and applications (e.g. Earth System Science applications or multi-disciplinary Observatory Systems). Papers are being solicited in (but not limited to) the following areas:

Comprehensive and inclusive solutions for multi-disciplinary Earth Observation capabilities, addressing:

- The SoS approach for Earth Observation resources cooperation;
- Multi-disciplinary Interoperability Arrangements for Earth Observation resource (data and services) discovery, access, processing, and use; the service-oriented science;
- Multi-disciplinary interoperability Arrangements for cooperation between environmental models, model-based systems, and Earth Observation sensors;
- The GEOSS “Model Web” approach.

The benefits and outcomes of holistic approaches and multi-disciplinary advances for important Societal Benefit Areas, including:

- Climate, Biodiversity and Ecosystems; Water, Drought, and Agriculture; Health; Weather; Disasters.

Multi-disciplinary initiatives or pilots developing operational frameworks by applying interoperability arrangements and SoS solutions for Earth Observation resources.

- GEOSS Common Infrastructure (GCI) and Architecture Implementation Pilots (AIP), WMO Information Systems (WIS), National and International Spatial Data Infrastructure initiatives e.g. INSPIRE, the Global Monitoring for Environment and Security (GMES) initiative, CEOS infrastructure

Manuscript submission deadline: October 1, 2011

Inquiries concerning the Special Issue should be directed to the Guest Editors. Papers in electronic format can be submitted using the manuscript central web link <http://mc.manuscriptcentral.com/jstars>.

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